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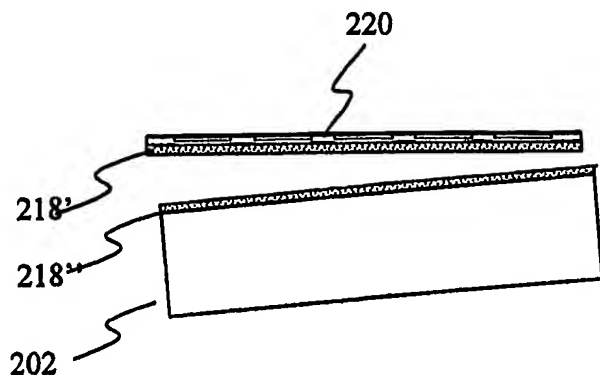
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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: METHOD AND SYSTEM FOR FABRICATING THIN DEVICES



(57) Abstract: Provided herein are various methods of and systems for fabricating ultra thin devices, multilayer devices, and vertically integrated devices. In one embodiment of the invention, a method of making a thin layer having a useful device thereon includes providing a device layer on a substrate with a release layer between the device layer and the substrate; forming one or more devices on the device layer; and separating the device layer from said substrate via processing of said release layer while minimizing or obviating damage to said devices formed on said device layer.

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## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 06/30549

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(8): G03F 7/00 (2006.01); H01L 29/06 (2006.01)

USPC: 430/320; 430/322; 438/761

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC(8): G03F 7/00 (2007.01);

USPC: 430/320; 430/322; 438/761

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
IPC(8): H01L 29/06; USPC: 438/455; 438/458; 438/408; 438/850; 438/480

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

PubWESTUSPT, PQP, EPAB, JPAB; DialogPRO(Engineering); Google Patents; PAIR

Search Terms: semiconductor, "thin layer," fabrication, "release layer," porous, sub-layer, "weak bond," "strong bond," "crystalline ad substrate,"

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

| Category* | Citation of document, with indication, where appropriate, of the relevant passages             | Relevant to claim No.      |
|-----------|--|----------------------------|
| X         | US 6,682,990 B1 (Iwano et al.) 27 January 2004 (27.01.2004), entire document                   | 1, 2                       |
| Y         |  | 3-18, 22-45                |
| Y         | US 2004/0082149 A1 (Sakaguchi et al.) 28 April 2004 (28.04.2004), Para [0037]; Figs. 2A and 2B | 3-6, 12, 16, 28-31, 37, 41 |
| Y         | US 4,848,831 A (Gmitter et al.) 11 July 1989 (11.07.1989), Col. 6, lines 47-49                 | 7, 13, 17, 24, 32, 38, 42  |
| Y         | US 2004/0110320 A1 (Bernard et al.) 10 June 2004 (10.06.2004), Para [0103]                     | 8, 14, 18, 39              |
| Y         | US 5,248,621 A (Sano) 28 September 1993 (29.09.1993), claim 6                                  | 6, 31                      |
| Y         | US 4,900,372 A (Lee et al.) 13 February 1990 (13.02.1990), entire document                     | 9, 15, 19, 34, 40, 44      |
| Y         | JP 63-155731 A (Iwada) 28 June 1988 (28.06.1988), (Abstract Fig. (b))                          | 10-19, 35-44               |
| Y         | US 2005/0023528 A1 (Forbes) 03 February 2005 (03.02.2005), Abstract                            | 22-45                      |

☐ Further documents are listed in the continuation of Box C.

\* Special categories of cited documents

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"Z" document member of the same patent family

Date of the actual completion of the international search

18 May 2007 (18.05.2007)

Date of mailing of the international search report

14 SEP 2007

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# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 06/30849

## Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2. ☐ Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
  
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

Group 1: Claims 1-45  
Group 2: Claims 46-51  
Group 3: Claims 52-66, 94-96  
Group 4: Claims 67-74  
Group 5: Claims 75-88  
Group 6: Claims 89-93  
Group 7: Claims 97-98  
Group 8: Claims 99-106

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:  
Group 1: Claims 1-45

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.